United States
Environmental Protection
Agency

Solid Waste and
Emergency Response
(5502G)

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Summer 1993

EPA

Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Fike/Artel Chemical Site Profile

Site Description:
A chemical manufacturing plant close to downtown Nitro, West Virginia

Site Size: 11.9 acres

Primary Contaminants:
Volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), dioxin, cyanide, asbestos, metals and methylmercaptan

Potential Range of Health Risks:
Direct contact with affected soil and water could result in cardiovascular and respiratory distress; cyanide poisoning can be deadly

Nearby Population Affected:
25,000 people within 10 miles

Ecological Concerns:
The Kanawha River is located 2,000 feet west of the site

Year Listed on NPL: 1983

EPA Region: 3

State: West Virginia

Congressional District: 3

Success In Brief

EPA Defuses A Toxic Time Bomb At Fike/Artel Chemical Site

The Fike /Artel Chemical site in Nitro, West Virginia, was a sprawling chemical production facility where a composite of highly toxic and potentially explosive contaminants had been dumped. Because of the danger to the surrounding community and environment, the U.S. Environmental Protection Agency (EPA) stabilized the contaminants and designed a comprehensive cleanup plan for this complex site. Emergency actions included safely detonating a cylinder of deadly hydrogen cyanide gas, and treating and removing 5,000 drums of hazardous waste and dozens of cylinders of toxic corrosive gases. In addition, EPA's Superfund staff: .

- Developed separate cleanup strategies for five different operable units at the site;
- Negotiated with site polluters to conduct the cleanup;
- Stabilized or removed additional wastes in on-site tanks; and
- Addressed community concerns through an active community relations program.

This site is a good example of how EPA's Superfund program responds to emergency situations by taking quick actions as well as cleaning up large volumes of hazardous waste.

John Fellinger/Roy F. Weston, Inc.

Site investigators found hundreds of leaking storage tanks, chemical wastes dumped into unlined lagoons, and thousands of corroded and leaking storage drums.

The Site Today

To date, EPA has eliminated immediate threats to the surrounding community, and completed studies to address one operable unit at the site. Construction has begun to support upcoming cleanup activities. Comprehensive studies of contamination in the remaining areas are under way EPA is planning to negotiate with the waste generators and former owners and operators for a long-term commitment to restore the soil and ground water.

A Site Snapshot

The Fike /Artel Chemical site spans almost 12 acres in Nitro, West Virginia. The surrounding area is industrial and residential; 8,000 people live within one mile and 25,000 people live within 10 miles. The Kanawha River, a tributary to the Ohio River, runs 2,000 feet west of the site.

The site is situated on a World War I munitions plant. In 1951, Roberts Chemical began developing and producing customized chemicals there.

In 1971, the site was renamed Fike Chemical, Inc. (Fike). From 1971 to 1976, Fike produced specialty chemicals for different companies, and placed production wastes in drums or unlined lagoons on site. In addition, a variety of other chemicals were improperly stored in tanks that ultimately leaked into the soil.

The site had 300 storage tanks containing acids, bases, flammables, and cyanides. An estimated 5,000 storage drums, many of them buried, contained approximately 100,000 pounds of metallic sodium. In addition, a pressurized tank with approximately 9,000 gallons of methylmercaptan and approximately 8,000 laboratory containers (one gallon or smaller) were also found on site.

"The plant [was] an inferno of rusting vats, pipes shedding their insulation, and hundreds of oil drums"

Of the site's appearance one reporter wrote, "the plant is an inferno of rusting vats, pipes shedding their insulation, and hundreds of oil drums, their contents marked on them in spray-painted letters. The equipment hisses and gives off steam and a variety of pungent odors" (The *Charleston* Gazette).

The site contamination is extensive. The ground water, surface water, and soil all contain a variety of volatile organic compounds (VOCs), dioxin polychlorinated biphenyls (PCBs), cyanide, asbestos, metals and methylmercaptan. The Kanawha River is contaminated as well.

Direct contact with these substances could result in cardiovascular and respiratory distress as well as central nervous sytem disorders. Cyanide poisoning can be deadly.

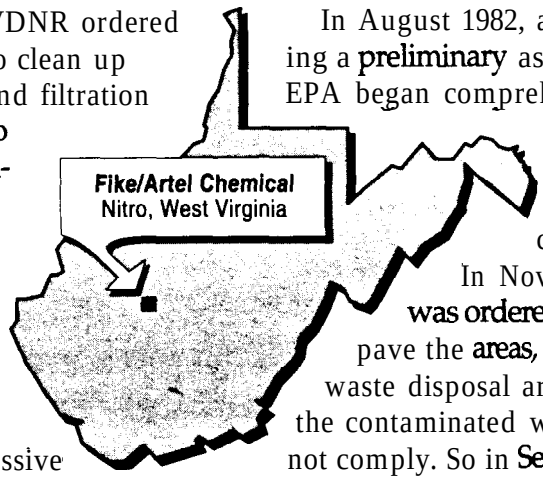
John Fellinger/Roy F. Weston, Inc.

Chemical Company Owners Resist EPA and State Orders to Clean Up Site

In 1975, the Cooperative Sewage Treatment Company (CST), a joint venture of Fike and Coastal Tank Lines, was constructed to treat industrial wastewater resulting from site operations. The CST facility occupied less than one acre, but consisted of three lagoons, tanks, and sludge drying beds that were used to contain and treat the wastewater.

Stormwater drainage and contaminated water from the chemical processing area were carried to CST by drainage ditches and a World War I-era sewer system. The wastewater was treated, although insufficiently, and the effluent was discharged into the Kanawha River. As a result, in 1976, Fike was cited by the West Virginia Department of Natural Resources (WVDNR) for numerous violations of the Clean Water Act.

In 1978, WVDNR ordered the company to clean up their sewage and filtration systems, and to seal off the contaminated lagoons. Fike refused to comply with this order.

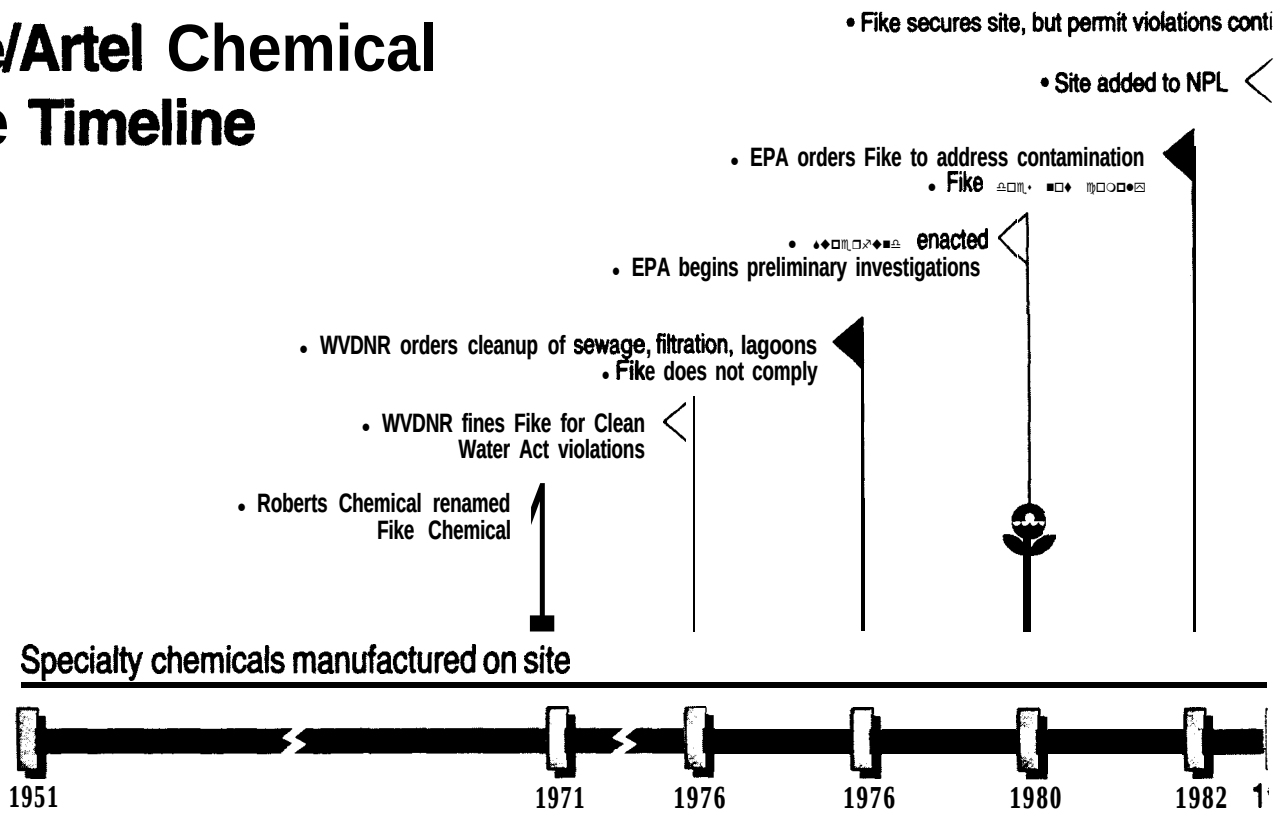


Because of the volatile nature and massive quantity of contaminants at the site, WVDNR asked EPA to investigate the site in November 1979. In 1980, Congress enacted Superfund legislation to address the nation's abandoned or uncontrolled hazardous waste sites. Under this new authority, EPA began investigating the site.

In August 1982, after completing a preliminary assessment, EPA began comprehensive studies to determine the extent of the contamination.

In November, Fike was ordered to dike and pave the areas, cover the main waste disposal area, and treat the contaminated water. Fike did not comply. So in September 1983, EPA placed the site on the National Priorities List (NPL), the nation's roster of hazardous waste sites eligible for cleanup with federal funds.

Fike/Artel Chemical Site Timeline



In early March 1984, EPA ordered Fike to secure the site from public access, and Fike complied. For the remaining months of 1984, EPA issued several orders to Fike to address violations of their permit to accept and store hazardous waste. Fike failed to comply and so its permit was revoked in 1985. The company paid a $5,000 fine for the violations.

EPA's Emergency Response Team began efforts to move materials posing the most immddiate threats

Violations Continue Despite New Ownership

In May 1986, the company was purchased by Artel Chemical Co. (Artel). The former owner of Fike stayed on as the site manager, however, and the violations continued. In both June and September 1986, WVDNR inspected the site and found that company personnel had been mishandling and improperly treating the wastes on site. The state fined Artel $165,000 for these violations, but Artel did not pay the fine. In January 1987, WVDNR ordered the company to inventory site wastes, and develop a plan to identify and manage on-site wastes.

In May 1987, EPA and Artel entered into negotiations to clean up the site but were unable to reach an agreement. In June 1988, Artel stopped paying its employees and abandoned the site. The materials left behind posed an immediate and substantial endangerment, and so WVDNR asked EPA to take over responsibility for the site.

EPA subsequently divided the site into five distinct project areas, called operable units, to more effectively address the contamination. Due to the history of non-compliance at this site, EPA decided to conduct the immediate cleanup and to recover the costs from the owners, operators and waste generators at a later date.

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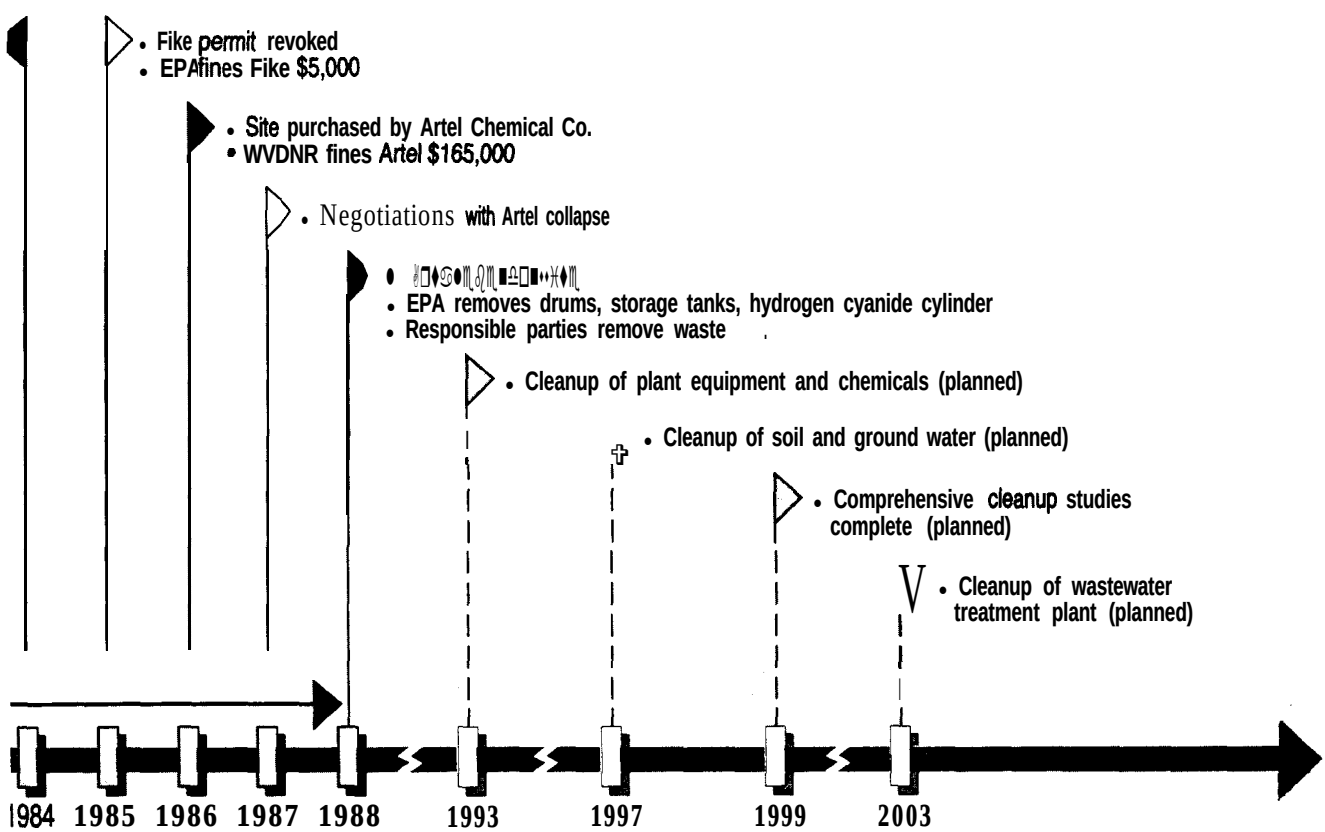

Owners Resist EPA and State Orders

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EPA Defuses
An Explosive Situation

On June 11, 1988, workers from EPA's Emergency Response Team identified a steel cylinder containing deadly hydrogen cyanide gas that could explode if disturbed. Workers evacuated approximately 2,500 members of the community before destroying the cylinder. EPA specialists placed explosive charges on the cylinder to cut it into three sections. The detonation simultaneously burned off the hydrogen cyanide gas.

Workers evacuated 2,500 residents before destroying a cylinder of deadly hydrogen cyanide gas

In July, EPA's Emergency Response Team began efforts to remove materials that posed the most immediate threats, including the drums and the storage tanks. Throughout the summer, workers removed approximately 5,000 drums, drained the storage tanks and removed the contaminated wastes.

Beginning in August 1988, two of the responsible parties also began removing wastes from the site. American Cyanamid removed a railcar of sulfuric acid and about 9,600 gallons of methylmercaptan in spring 1989. Union Carbide removed about 55,000 pounds of sodium.

Following efforts to locate other waste contributors, EPA negotiated the cleanup of operable unit two, which requires dismantling and removing a former processing facility. The responsible parties have agreed to do the work. Remedial actions for operable unit two are scheduled to begin in the summer of 1993.

Workers Face
Future Challenges

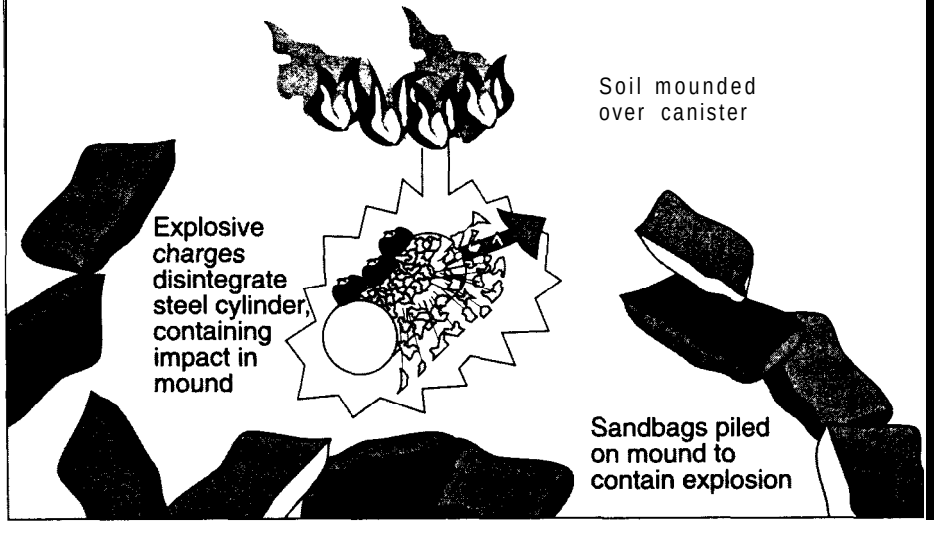
Despite EPA's emergency actions, workers now estimate that they will not be finished until after the year 2000. The third and fourth operable units pose distinct long-term challenges. The objective of operable unit three is to excavate and dispose of an estimated 7,000 to 16,000 buried drums and containers and incinerate them off site. This excavation will prevent any risk to workers during future site activities.

Other cleanup activities address soil and ground water contamination

Operable unit four will address the soil and ground water contamination, and operable unit five will consist of cleaning up CST's wastewater treatment facility. Cleanup workers are studying both areas to determine the best cleanup strategy. EPA plans to dismantle the CST facility once all of the other contamination has been addressed.

Negotiations are ongoing for operable unit three; EPA anticipates initiating negotiations for operable units four and five in the near future.

Flames from a controlled explosion burned off the dangerous hydrogen cyanide gas



Community Relies on "the Experts" to Remedy Situation

Many residents of Nitro work at chemical manufacturing companies in the area, and expressed concern that EPA's action at the Fike /Artel Chemical site would lead to closures of other nearby facilities.

Unlike these other companies, the Fike /Artel Chemical site had been seriously mishandled by its owners. EPA assured Nitro residents that facilities in compliance with environmental regulations would not face closure. When asked about EPA's involvement at the site, both residents and local officials stated that they were "relying on the experts" to remedy the situation.

EPA's program to keep the public informed included: issuing regular fact sheets; holding open meetings at which the progress at the site was discussed; holding press briefings; and opening a local information repository for site documents.

Success at Fike/Artel Chemical

The immediate danger has been eliminated, and EPA is continuing studies to determine the full extent of the soil and ground water contamination. A long-term cleanup of the site will be necessary. The responsible parties have agreed to dismantle a former processing facility and are currently negotiating to remove thousands of additional buried drums. EPA is working to recover its costs for emergency operations from the responsible parties.

For additional copies of this or other *Superfund At* Work updates, contact the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield,VA 22161, telephone (703) 487-4650.

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